Air Force Research Laboratory | AFRL

Science and Technology for Tomorrow's Aerospace Forces

Success Story

Conversion to JP-8 Fuel

Payoff

Air Force and Army conversion to JP-8 fuel greatly increases the survivability of aircraft, by reducing post crash fires and projectile induced ignitions. In addition, JP-8 greatly reduces the risk of aircraft fires and explosions, both in-flight and on the ground. Standardization with commercial jet fuel will enhance availability and simplify logistics throughout the world.

Accomplishment

JP-8 fuel was developed by the Aero Propulsion and Power Directorate and has been selected as the primary fuel at all Air Force and Army military locations throughout the world. JP-8 was used in war for the first time during Desert Storm. Both Air Force aircraft and Army aircraft, tanks and trucks used JP-8 without a known weapon system loss due to fuel fires or explosions. This success, coupled with its successful utilization ar Air Force Bases in the United Kingdom since 1979, persuaded the Air Force and the Army to make the conversion to JP-8, scheduled for completion in 1996.

Background

During the Vietnam conflict, the Air Force experienced extensive aircraft and crew losses due to the use of JP-4. In addition, the Air Force Engineering Safety Center indicated that the Air Force averaged the loss of one aircraft per year due to fuel fires, and explosions. This resulted

in Wright Laboratory (WL) being requested to develop a fuel that would make aircraft safer and less vulnerable when exposed to hostile gunfire. WL conducted extensive test (including exposing aircraft fuel tanks to live gunfire) to determine the characteristics os a fuel that would offer improved safety and survivability over JP-4. This new fuel would need to be producible by refineries at the required quantities and at an affordable cost. The characteristics of JP-8 were selected so as to standardize with the commercial aviation fuel (Jet A-1), while retaining the specific capabilities needed to meet the specialized requirements of Air Force aircraft. Extensive flight and cold weather ground tests were conducted on a variety of aircraft using JP-8 in order to assure compatibility with a wide range of weapon system requirements. Since its initial validation at Air Force bases in the United Kingdom, JP-8 has successfully demonstrated its capability to provide the additional safety protection needed for aircraft and ground fuel handling systems. Following the success in the United Kingdom and in Desert Storm, where France and the United Kingdom used JP-8 in their aircraft with similar success, the Air Force and Army decided to convert to JP-8 at all military locations throughout the world.

Air Force Research Laboratory
Wright-Patterson AFB, OH
Propulsion Directorate

Additional information

To receive more information about this or other activities in Air Force Research Laboratory Propulsion Directorate, contact Kristen Schario, AFRL/PROP, (937)255-3428 and you will be directed to the appropriate Laboratory expert. (00-PR-02)